

## CLAIMS

1. A process for causing a stem cell to differentiate into a cell which expresses surfactant protein C (SPC), the process comprising the steps of: (a) culturing the stem cell to give an embryoid body; and (b) culturing the embryoid body under conditions which cause it to differentiate into cells which express surfactant protein C.
2. The process of claim 1, wherein stem cells are grown initially in step (a) in suspension culture.
3. The process of claim 1 or claim 2, wherein embryoid bodies formed in step (a) are exposed to differentiation factors.
4. The process of any preceding claim, wherein step (b) takes place in the presence of epidermal growth factor.
5. The process of any preceding claim, wherein step (b) takes place in the presence of SAGM.
6. The process of any preceding claim, wherein the stem cell is an embryonic stem (ES) cell.
7. A SPC<sup>+ve</sup> cell differentiated *in vitro* from a stem cell.
8. A collection comprising a plurality of cells, wherein at least 95% of the total number are SPC<sup>+ve</sup>.
9. A cell culture comprising SPC<sup>+ve</sup> cells, wherein the mass of said cells within the culture is at least 10 grams.
10. An isolated SPC<sup>+ve</sup> cell, wherein the telomeres in the cell are longer than the telomeres in a SPC<sup>+ve</sup> cell found *in vivo* in lung tissue of the same species.
11. An ES-derived cell, in which SPC is expressed.
12. A method of treating a patient, comprising administering cells according to any one of claims 7 to 11 to the patient.
13. Cells according to any one of claims 7 to 11 for use as a medicament.
14. Use of cells according to any one of claims 7 to 11 in the manufacture of a medicament for treating a patient.
15. A syringe containing cells according to any one of claims 7 to 11.
16. Cells according to any one of claims 7 to 11, wherein the cells are encapsulated in an artificial material.

17. A collection of cells, wherein the collection comprises SPC<sup>+ve</sup> cells, and wherein the number of said SPC<sup>+ve</sup> cells per gram weight of all cells in the collection is at least 10<sup>9</sup>.
18. An *in vitro* assay comprising the steps of (a) incubating a test substance with cells according to any one of claims 7 to 11, and (b) detecting changes in said cells.
- 5 19. A method for preparing an AE1 cell, comprising the step of culturing cells according to any one of claims 7 to 11 under appropriate conditions.
20. A process for differentiating stem cells into SPC<sup>+ve</sup> cells, wherein the proportion of stem cells which become SPC<sup>+ve</sup> cells is more than 50%.
- 10 21. A process for causing a stem cell to differentiate into a cell which expresses surfactant protein C, the process comprising the steps of: (a) co-culturing the stem cell with lung mesenchyme; and (b) culturing the cell under conditions which cause it to differentiate into a cell which expresses surfactant protein C.